CS-1 COPY

NOVEMBER/DECEMBER 2023

CSCS33 — DIGITAL LOGIC DESIGN AND COMPUTER ORGANIZATION

Time : Three hours Maximum : 75 marks

SHANMUGA ARTS & SCIENCE COLLEGE LIBRARY

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. Compute $(1111.0001)_2$ = (_____)$_7$.

2. List the universal gates.

3. Draw a full adder circuit.

4. What is called BCD Adder?

5. List the types of counters.

6. Define multiplexer.

7. What is called instruction register?

8. What does the term addressing modes refer?

9. Define Asynchronous data transfer.

10. What is called direct mapping?

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) Find binary and hexadecimal of $(4565.205)_{10}$.

Or

(b) State and prove any five Boolean Laws.

12. (a) Design a half adder using NAND-NAND logic.

Or

(b) Prove the following :

(A + B) ((AC)'+C) (B' + AC)' = A'B.

13. (a) Distinguish a combinational logic circuit and a sequential logic circuit.

Or

(b) Design and describe the operation of RS flip flop.

14. (a) Explain different types of instruction formats.

Or

(b) Summarize on any three addressing modes.

15. (a) What is called priority interrupt? Explain.

Or

(b) Explain the concept of associative mapping.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. How to perform binary addition, binary subtraction and binary multiplication? Explain with examples.

17. Reduce the Boolean function using k-map technique and implement using gates

f (w, x, y, z) = Σm (0, 1, 4, 8, 9, 10) which has the don't cares condition d (w, x, y, z) = Σ m (2, 1, 1).

LIBRARY

18. Using a JK flip flop, how a D flip flop can be obtained? Discuss.

19. Give a brief note on basic operational concepts of computers.

20. Explain the structure, read and write operation in magnetic tape.

———————